

WHAT IS CLAIMED IS:

1. A method for sealing a container, comprising:
providing at least two components of the container;
positioning a crushable material between the at least two components;
positioning a reactive multilayer material between the at least two components;
deforming the crushable material so as to form a seal between the at least two components; and
chemically transforming the reactive multilayer material so as to join the at least two components.
2. The method of claim 1, further comprising positioning a fusible material between the at least two components;
wherein chemically transforming the reactive multilayer material includes transforming the fusible material so as to join the at least two components.
3. The method of claim 1, wherein the reactive multilayer material includes a reactive multilayer foil.
4. The method of claim 1, wherein the reactive multilayer material includes a fusible material.
5. The method of claim 1, wherein the seal is a hermetic seal.

6. The method of claim 1, wherein chemically transforming the reactive multilayer material forms another seal between the at least two components.
7. The method of claim 1, wherein chemically transforming the reactive multilayer material stabilizes the seal between the at least two components.
8. The method of claim 6, wherein the another seal is a hermetic seal.
9. The method of claim 1, wherein deforming the crushable material includes applying force to at least one of the at least two components.
10. The method of claim 1, further comprising determining the quality of the seal.
11. The method of claim 10, wherein determining the quality of the seal includes determining a leak rate of the seal.
12. The method of claim 10, further comprising providing predetermined quality parameters for the seal,
wherein determining the quality of the seal includes determining whether the quality of the seal is within the predetermined quality parameters.

13. The method of claim 1, wherein chemically transforming the reactive multilayer material includes igniting at least a portion of the reactive multilayer material.

14. The method of claim 1, wherein deforming the crushable material seals an interior of the container from an outside environment.

15. The method of claim 1, further comprising selecting the reactive multilayer material based on the strength of the seal desired.

16. The method of claim 1, wherein the crushable material is configured to permanently deform.

17. The method of claim 1, wherein the crushable material is configured to reversibly deform.

18. The method of claim 1, wherein the crushable material includes a soft metal.

19. The method of claim 18, wherein the soft metal includes at least one of copper, gold, aluminum, stainless steel, Kovar, and soft solder.

20. The method of claim 1, wherein the crushable material includes a compressible polymer.

21. The method of claim 20, wherein the compressible polymer includes at least one of buna rubber, silicon rubber, and viton.

22. The method of claim 14, wherein the crushable material is positioned on an inward side of the reactive multilayer material relative to the outside environment.

23. The method of claim 1, further comprising providing a groove on one of the at least two components;

wherein positioning the crushable material includes placing the crushable material in the groove.

24. The method of claim 1, further comprising providing a protrusion on one of the at least two components;

wherein deforming the crushable material includes deforming the crushable material against the protrusion.

25. The method of claim 24, further comprising providing another protrusion on another of the at least two components,

wherein deforming the crushable material includes deforming the crushable material against the another protrusion.

26. The method of claim 1, further comprising providing a groove on one of the at least two components,

wherein deforming the crushable material includes deforming the crushable material into the groove.

27. The method of claim 1, further comprising providing a corner on one of the at least two components,

wherein positioning the crushable material includes placing the deformable material in the corner.

28. The method of claim 1, further comprising providing a corner on one of the at least two components,

wherein deforming the crushable material includes deforming the crushable material into the corner.

29. The method of claim 1, wherein one of the at least two components is a lid and the other of the at least two components is a container body.

30. A sealed product, comprising:
at least two components defining a container;
a crushable material disposed between the at least two components, the crushable material being in a deformed state and forming a seal between the at least two components; and

a remnant of a chemical transformation of a reactive multilayer material disposed between the at least two components and joining said at least two components.

31. The sealed product of claim 30, wherein the reactive multilayer material includes a reactive multilayer foil.

32. The sealed product of claim 30, wherein the reactive multilayer material includes a fusible material.

33. The sealed product of claim 32, wherein the fusible material is configured to join the at least two components.

34. The sealed product of claim 30, further comprising a fusible material disposed between the at least two components.

35. The sealed product of claim 34, wherein the fusible material is configured to join the at least two components.

36. The sealed product of claim 30, wherein the crushable material is located on an inward side of the remnants of the chemical transformation of the reactive multilayer material.

37. The sealed product of claim 30, wherein the crushable material and the remnant of the chemical transformation cooperate to form a hermetic seal between the at least two components.

38. The sealed product of claim 30, wherein the crushable material is configured to permanently deform.

39. The sealed product of claim 30, wherein the crushable material is configured to reversibly deform.

40. The sealed product of claim 30, wherein the crushable material includes a soft metal.

41. The sealed product of claim 40, wherein the soft metal includes at least one of copper, gold, aluminum, stainless steel, Kovar, and soft solder.

42. The sealed product of claim 30, wherein the crushable material includes a compressible polymer.

43. The sealed product of claim 42, wherein the compressible polymer includes at least one of buna rubber, silicon rubber, and viton.

44. The sealed product of claim 30, wherein the crushable material is at least partially disposed in a groove of one of the at least two components.

45. The sealed product of claim 44, wherein the crushable material is at least partially disposed in another groove of another of the at least two components.

46. The sealed product of claim 30, wherein the crushable material is disposed against a protrusion on one of the at least two components.

47. The sealed product of claim 30, wherein the crushable material is disposed against another protrusion on another of the at least two components.

48. The sealed product of claim 30, wherein the crushable material is disposed in a corner of one of the at least two components.

49. The sealed product of claim 30, wherein one of the at least two components is a lid and another of the at least two components is a container body.

50. A kit for forming a sealed container, comprising:
at least two components which, when joined, define the container;
a crushable material configured to be positioned between the at least two components; and

a reactive multilayer material configured to be positioned between the at least two components,

wherein the crushable material, in a deformed state, is configured to substantially form a seal between the at least two components,

wherein at least a portion of the reactive multilayer material is configured to be chemically transformed so as to join the at least two components.

51. The kit of claim 50, wherein the reactive multilayer material includes a reactive multilayer foil.

52. The kit of claim 50, wherein the reactive multilayer material includes a fusible material.

53. The kit of claim 52, wherein the fusible material is configured to join the at least two components.

54. The kit of claim 50, further comprising a fusible material configured to be disposed between the at least two components.

55. The kit of claim 54, wherein the fusible material is configured to join the at least two components.

56. The kit of claim 50, wherein the crushable material is configured to be positioned on an inward side of the reactive multilayer material relative to the outside environment.

57. The kit of claim 50, wherein the crushable material and a remnant of the chemical transformation of the reactive multilayer material cooperate to form a hermetic seal between the at least two components.

58. The kit of claim 50, wherein the crushable material is configured to permanently deform.

59. The kit of claim 50, wherein the crushable material is configured to reversibly deform.

60. The kit of claim 50, wherein the crushable material includes a soft metal.

61. The kit of claim 60, wherein the soft metal includes at least one of copper, gold, aluminum, stainless steel, Kovar, and soft solder.

62. The kit of claim 50, wherein the crushable material includes a compressible polymer.

63. The kit of claim 62, wherein the compressible polymer includes at least one of buna rubber, silicon rubber, and viton.

64. The kit of claim 50, wherein one of the at least two components includes a groove configured to at least partially receive the crushable material.

65. The kit of claim 64, wherein another of the at least two components includes another groove configured to at least partially receive the crushable material.

66. The kit of claim 50, wherein one of the at least two components includes a protrusion configured to be disposed against the crushable material.

67. The kit of claim 50, wherein another of the at least two components includes another protrusion configured to be disposed against the crushable material.

68. The kit of claim 50, wherein one of the at least two components includes a corner configured to receive the crushable material.

69. The kit of claim 50, wherein one of the at least two components is a lid and another of the at least two components is a container body.

70. A seal testing apparatus, comprising:
a chamber;

an instrument configured to apply pressure to a container disposed in the chamber;

a port configured to provide and remove gas from the chamber;

a trigger configured to initiate a chemical transformation of a reactive multilayer material; and

a leak detector configured to detect a leak from the container.

71. The seal testing apparatus of claim 70, wherein the reactive multilayer material is a reactive multilayer foil.

72. The seal testing apparatus of claim 70, wherein the instrument is a push rod.

73. The seal testing apparatus of claim 70, wherein the chamber is a vacuum chamber.

74. The seal testing apparatus of claim 70, wherein the port is configured to create a vacuum in the chamber.

75. The seal testing apparatus of claim 70, wherein the port is connected to a source of gas.

76. The seal testing apparatus of claim 70, wherein the port is connected to a vacuum source.